

Systematic study of the genus *Phiaris* Hübner (Lepidoptera: Tortricidae) from Korea and Japan, part II

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Abstract In the second part of study on the genus *Phiaris* Hübner, nine species belonging to the species-group *olivana* are treated. Among them, two species, *toshiookui* sp. nov. and *hokkaidana* sp. nov., are described as new to science, and four species, *castaneana* (Walsingham), *dolosana* (Kennel), *examinata* (Falkovitsh) and *transversana* (Christoph), are newly transferred to this genus from *Olethreutes*. Adults and genitalia of both sexes are illustrated. Host plants are listed. Key to species of the group is provided.

Key words Lepidoptera, Tortricidae, Olethreutinae, *Phiaris*, new species, Korea, Japan, taxonomy.

Introduction

The present paper is the second part of my revision of the tortricid genus *Phiaris* Hübner, 1825 from Korea and Japan. It deals with a revision of the species-group *olivana* including nine species. This paper was supported by a Korea Research Foundation grant made in the program year of 1997 (KRF-97-001-00041), and forms a part of the study on "Systematic study of the genus *Phiaris* Hübner (Lepidoptera: Tortricidae) from East Asia".

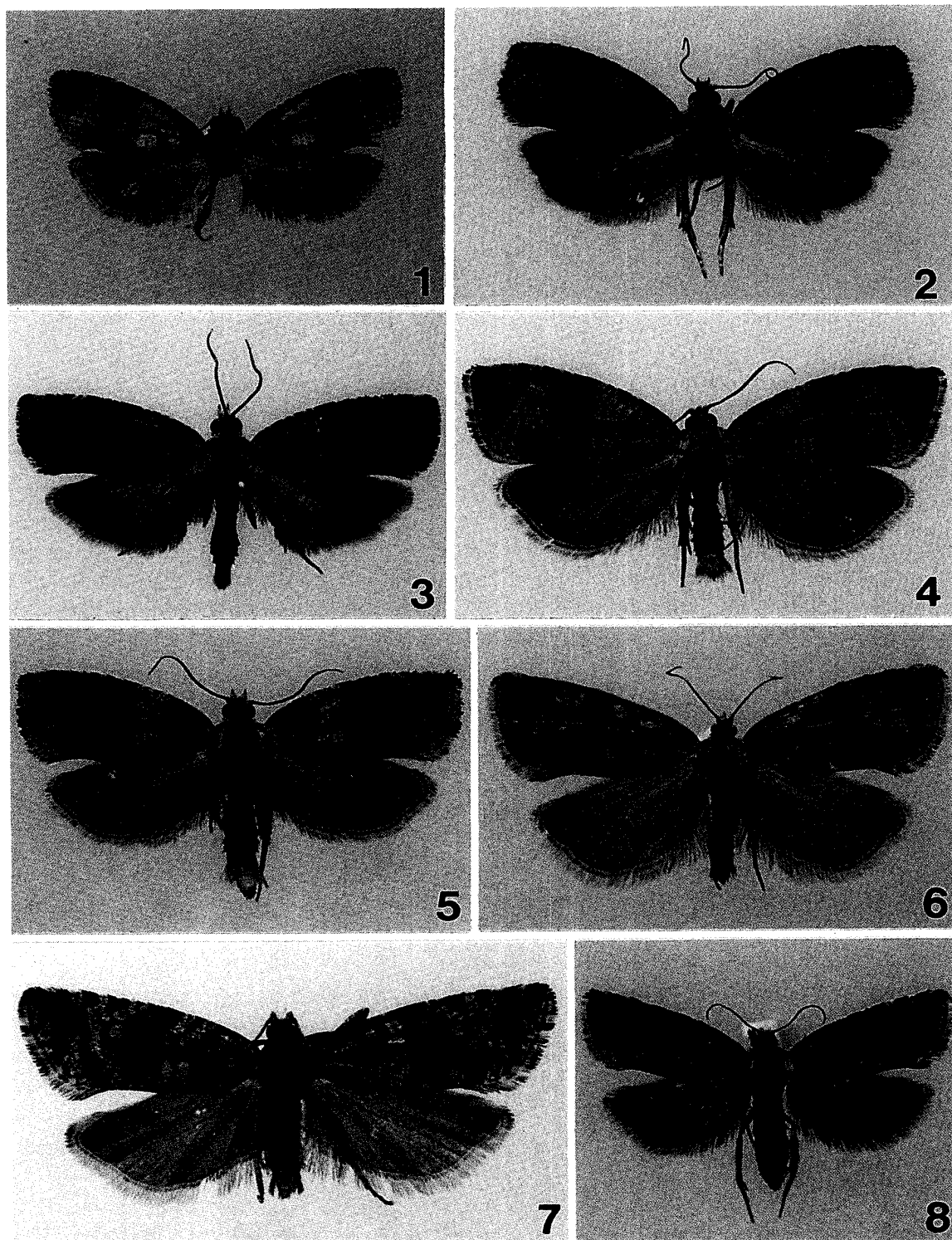
The material examined is based on the following collections (abbreviations in bracket): the Natural History Museum [BNHM], London, U. K.; Center for Insect Systematics [CIS], Chuncheon, Korea; Forest Research Institute [FRI], Seoul, Korea; the Hungarian Natural History Museum [HNHM], Budapest, Hungary; Department of Biology, University of Incheon [UIB], Incheon, Korea. Most of the Japanese materials with holotypes will be deposited in the collection of the Entomological Laboratory, Osaka Prefecture University [OPU], Sakai, Japan. Abbreviations for the provincial names are as follows: CB—Chungbug; CN—Chungnam; GB—Gyeongbug; GG—Gyeonggi; GN—Gyeongnam; GW—Gangwon; JB—Jeonbug; JJ—Jeju; JN—Jeonnam. For the distribution range in Korean Peninsula, three divisional words are used: North—North Korea (DPRK), South—South Korea (ROK), Jeju—Jeju Island.

Systematic accounts

The *olivana*-group

The group is separated from other members by the following male genitalic characters: (i) the uncus is remarkably hooked and usually bilobed, (ii) the tegumen is high, and (iii) the valva is slender, with a distinct longitudinal slit on the inner surface (Bae, 2000). This group contains ten species in Korea and Japan, *olivana* (Treitschke)¹⁾, *toshiookui* sp. nov., *cas-*

¹⁾Only a single specimen was recorded from N. Korea (Razowskii, 1995, 1999), but I have had no opportunity to examine Korean or Japanese material.



Figs 1-8. Adults of *Phiaris* spp. 1. *P. toshiookui* sp. nov., ♂, holotype. 2. *P. castaneana* (Walsingham), ♂. 3. *P. dolosana* (Kennel), ♂. 4. *P. examinata* (Falkovitsh), ♂. 5. *P. transversana* (Christoph), ♂. 6. *P. metallicana bicornutana* (Kuznetsov), ♂. 7. *P. schulziana* (Fabricius), ♀. 8. *P. hokkaidana* sp. nov., ♀, paratype.

taneana (Walsingham), *dolosana* (Kennel), *examinata* (Falkovitsh), *transversana* (Christoph), *hokkaidana* sp. nov., *schulziana* (Fabricius), *metallicana* (Hübner) and *dissolutana* (Stange).

Key to the species of the *olivana*-group

1. Forewing expanse 9.5–11.5 mm2
- Forewing expanse 14–22.5 mm3
2. Forewing markings orange brown or ferruginous brown sprinkled with ochreous, with two longitudinal black striae*hokkaidana* sp. nov.
- Forewing markings dark gray partly suffused with ochreous, without longitudinal black striae*toshiookui* sp. nov.
3. Forewing narrow, costa rather straight, markings ferruginous brown to orange brown*schulziana* (Fabricius)
- Forewing broad, costa curved outwards, markings not so colored4
4. Forewing markings irrorated with pale olive-ochreous, the outer margin overlaid with silvery metallic scales*metallicana* (Hübner)
- Forewing markings without such coloration5
5. Central fascia and terminal patch confluent below costa6
- Central fascia and terminal patch not confluent below costa7
6. Forewing markings overlaid with reddish brown, terminal patch broadly confluent with central fascia below costa*castaneana* (Walsingham)
- Forewing markings not this color, terminal patch narrowly confluent with central fascia below costa*dolosana* (Kennel)
7. Costal strigulae broad, whitish, distinct; aedeagus with cornutus*dissolutana* (Stange)
- Costal strigulae narrow, whitish ocher, indistinct; aedeagus without cornutus8
8. Forewing broad, with distinctly emarginated central fascia; aedeagus short; sterigma heart-shaped*examinata* (Falkovitsh)
- Forewing narrow, with indistinctly emarginated central fascia; aedeagus long; sterigma shield-shaped*transversana* (Christoph)

Phiaris olivana (Treitschke)

Sericoris olivana Treitschke, 1830, in Ochsenheimer, *Schmett. Eur.* 8: 151. Type locality: Germany (Saxony), Austria (Styria).

Olethreutes olivana: Bradley *et al.*, 1979: 27, pl. 23, figs 17–20.

Phiaris olivana: Razowski, 1983: 80, figs 66, 147, pl. 6, fig. 8, pl. 7, fig. 1; Razowski, 1995: 316.

Tortrix micana Hübner, 1799, *Samml. eur. Schmett.* 7: pl. 5, fig. 28. Type locality: Europe (*nec* [Denis & Schiffermüller], 1775).

Olethreutes micana (Hübner, 1799): Rebel, 1901, in Staudinger and Rebel, *Cat. Lepid. palaearct. Faunengeb.* 2: 107.

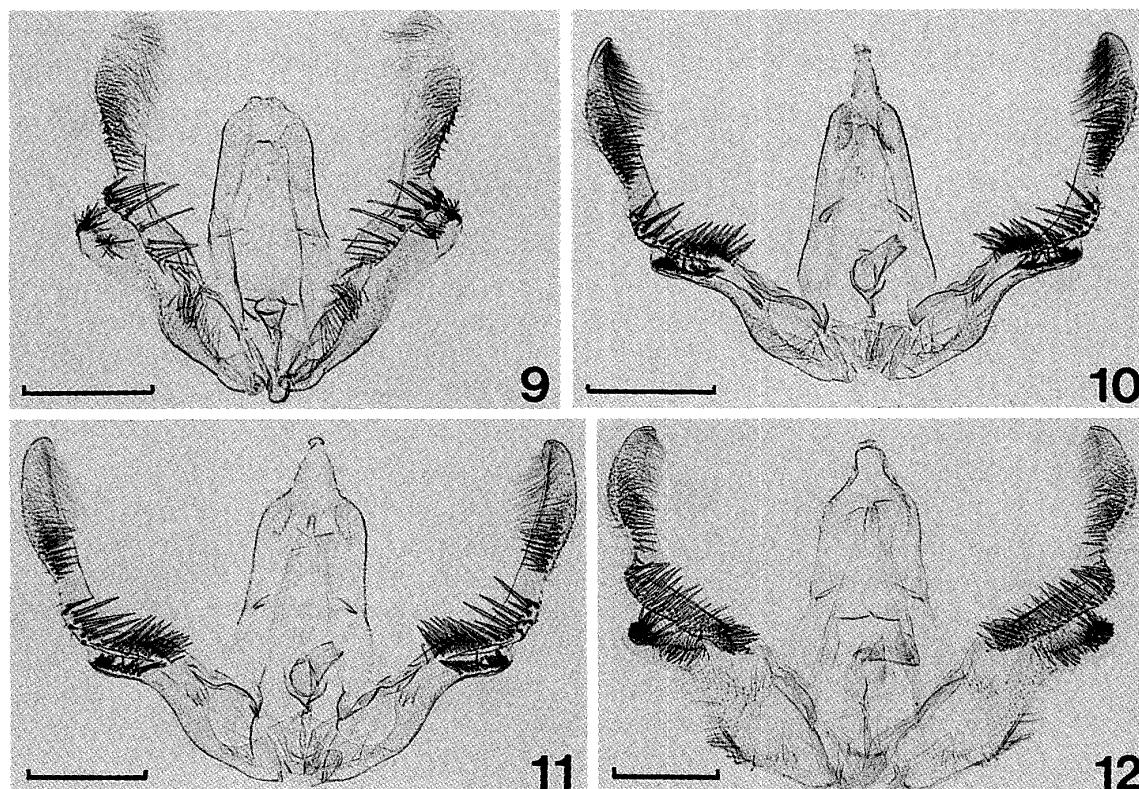
Phiaris micana (Hübner, 1799): Razowski, 1999: 106.

Phiaris micana ([Denis & Schiffermüller], 1775): Razowski, 1996: 145; Karsholt, 1996: 315.

Argyrolepis bistrigana Stephens, 1834, *Illust. Br. Ent.* (Haustellata) 4: 177. Type locality: England (London).

Orthotaenia haworthana Stephens, 1834, *Illust. Br. Ent.* (Haustellata) 4: 179. Type locality: England (Norfolk).

Wing expanse. ♂ ♀. 13–18 mm. See Bradley *et al.* (1979, pl. 23, figs 17–20) and Razowski (1983, pl. 6, fig. 8, pl. 7, fig. 1).



Figs 9–12. Male genitalia of *Phiaris* spp. 9. *P. toshiookui* sp. nov., holotype. 10. *P. castaneana* (Walsingham). 11. *P. dolosana* (Kennel). 12. *P. examinata* (Falkovitsh). Scales=0.5 mm.

Male genitalia. See Razowski (1983, fig. 66). Uncus moderate in size; socius elongate; gnathos membranous, laterally sclerotized. Valva long and narrow, folded at middle; cucullus clavate, necked at middle, with strong spine-like setae along basal half; sacculus long, narrow, with tuft consisting of 6–7 stout spine-like setae at apical part, and with tuft sparse short and weak setae below apex. Aedeagus moderate in size; cornuti consisting of five stout spine-like setae.

Female genitalia. See Razowski (1983, fig. 147). Sterigma developed, subdivided into lamella antevaginalis and lamella postvaginalis, the former large subtriangular, with lobe-like projections laterally, the latter large subquadrate. Ostium bursae opening at posterior margin of lamella antevaginalis, wide cup-shaped, sclerotized. Ductus bursae and corpus bursae moderate in size; signum small, nipple-like.

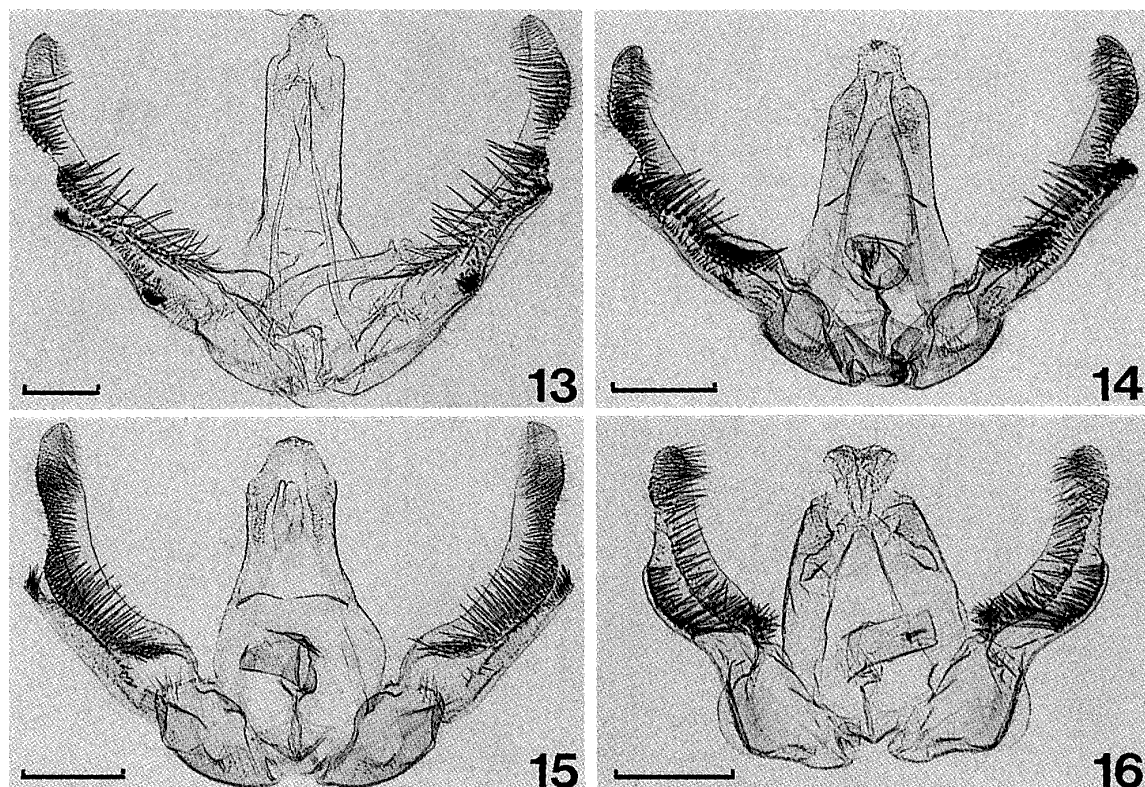
Distribution. Korea (North), Russia, Europe, Russia (Priural'e, Siberia, Primorye).

Host plant. Europe: herbaceous plants and mosses (Bradley *et al.*, 1979).

Remarks. This species was recorded from N. Korea by Razowski (1995, 1999) based on a single specimen from Sandjiyon (=Samjiyon, Mt Paektu), but no specimen has been found in S. Korea and Japan.

***Phiaris toshiookui* sp. nov.** (Figs 1, 9, 17)

♂. Wing-expanse. 9.5 mm (Fig. 1). Head ochreous; tufts on vertex suffused with blackish gray scales. Antenna dark gray; ventral surface scattered with creamy white. Labial palpus



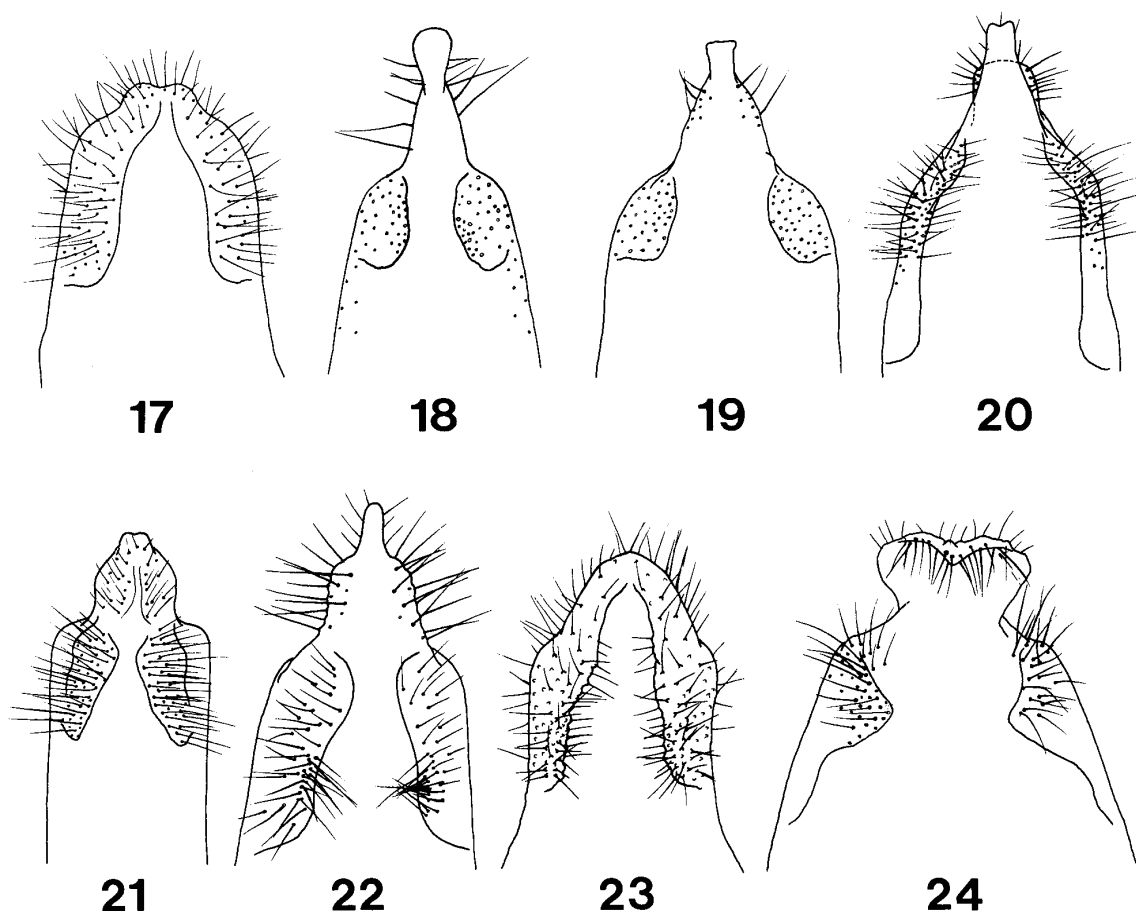
Figs 13–16. Male genitalia of *Phiaris* spp. 13. *P. transversana* (Christoph). 14. *P. hokkaidana* sp. nov., paratype. 15. *P. schulziana* (Fabricius). 16. *P. metallicana bicornutana* (Kuznetsov). Scales=0.5 mm.

creamy white; median segment not apically expanded, suffused with gray at basal half; terminal segment pointed and slightly descending. Thorax dark brown, mixed with ochreous on dorsal side, brilliant pale gray on ventral side. Legs pale ochreous, sprinkled with gray; midtibia with two distinct brownish spots at base and subapex; tarsi of fore- and midlegs with five rather short brownish rings. Abdomen dark gray on dorsal side, pale gray on ventral side; anal tufts ochreous, slightly tinged with gray.

Forewing broad, elongate; costa slightly curved outwards; apex rounded; termen curved at tornal third. Ground color silvery white, irregularly striated and spotted with dark brown and steel gray. Costal strigulae distinct, consisting of four or five pairs of geminated yellowish white striae on apical half. Markings dark gray, partly suffused with ochreous; basal patch distinct, outer edge convexly sinuate; central fascia rather diffuse, the inner edge more or less straight, the outer edge diffuse with a projection at middle part; pretornal patch ill-defined, subtriangular, narrowly connected with central fascia on dorsal margin; terminal patch elongate-ovate, the top narrowly extending to costa; apical spot small, diffuse. Cilia pale ochreous, marked with fuscous near apex and opposite terminal and pretornal markings, with a dark grayish subbasal line. Hindwing elongate-ovate, gray, with rounded apex. Cilia pale gray, with a grayish subbasal line.

Male secondary sexual characters: Hair pencil of hindleg dark gray, 0.8 times as long as tibia. Dorsum of hindwing with a cylindrical roll, reaching from base to beyond tornus.

Male genitalia (Figs 9, 17). Uncus very short, with slightly emarginate apex; socius long and narrow, drooping; gnathos laterally sclerotized. Valva long, folded at middle; cucullus



Figs 17-24. Male uncus and socius of *Phiaris* spp., ventral view. 17. *P. toshiookui* sp. nov., holotype. 18. *P. castaneana* (Walsingham). 19. *P. dolosana* (Kennel). 20. *P. examinata* (Falkovitsh). 21. *P. transversana* (Christoph). 22. *P. hokkaidana* sp. nov., paratype. 23. *P. schulziana* (Fabricius). 24. *P. metallicana bicornutana* (Kuznetsov).

long, clavate, a row of 15-17 spine-like setae at basal lower margin; sacculus long, apex expanding, with two clusters of spine-like setae at apical part, and with numerous, weak setae near basal cavity. Aedeagus very short, sclerotized, with truncate apex; cornutus absent.

Female unknown.

Material examined. Holotype, ♂, Mt Hayachine, Iwate Pref., Honshu, Japan, 23. VIII. 1971 (T. Oku), Gen. sl. no. Bae 91-789, OPU.

Distribution. Japan (Honshu).

This new species is similar to *P. morivora* (Matsumura) in superficial appearance, but can be separated by the silvery white ground color and distinct basal patch instead of the whitish ground color and indistinct basal patch in the latter. The structure of the male genitalia are unique among all known species of the genus in having a very short and emarginated uncus and a long and clavate cucullus. Only one male specimen has been collected from Mt Hayachine, Japan. The species is dedicated to Dr Toshio Oku of Morioka City, who collected the holotype.

***Phiaris castaneana* (Walsingham), comb. nov. (Figs 2, 10, 18, 25)**

Exartema castaneanum Walsingham, 1900: 124; Inoue, 1954: 108; Issiki, 1957: 71, fig. 345. Type locality: Japan (Kyushu), Korea (Gensan=Weonsan).

Olethreutes castaneana: Kawabe, 1982: 1: 109, 2: 170, pl. 24, fig. 28; Park, 1983: 721, 983; Byun *et al.*, 1998: 197 (unrecognized in Korea).

Olethreutes castaneanus: Razowski, 1995: 310; Razowski, 1999: 103.

Wing-expanse. ♂ 17–18 mm, ♀ 15–17 mm. Wing markings as in Fig. 2. Male secondary sexual characters: Hair pencil of hindleg dark gray, as long as tibia. Dorsum of hindwing with a large spindle-shaped roll, reaching from base to tornus, separated from dorsal half.

Male genitalia (Figs 10, 18). Closely related and similar to those of *P. dolosana* (Kennel), but distinguished from the latter by the following points: uncus uniformly long and narrow; tegumen, valva and aedeagus longer and narrower.

Female genitalia (Fig. 25). Seventh sternite strongly concave at caudal part. Sterigma large inverted subtrapezoid, densely aciculate, concave at middle of lateral sides, with a longitudinal ditch at middle part. Ostium bursae opening at basal part of ditch. Ductus bursae moderate in size; colliculum short, tubular, sclerotized; corpus bursae moderate in size, without signum.

Material examined. JAPAN: [Ishikawa Pref.] 1 ♂, Ootani, Suzushi, 9. VII. 1991. [Nagano Pref.] 1 ♂, Mt Ontake, 5. VIII. 1953. [Fukui Pref.] 1 ♂, Onyu, Natasyo, 13–16. VII. 1977. [Gifu Pref.] 1 ♂ 1 ♀, Mt Kinkazan, 10. IX. 1951. [Kyoto Pref.] 1 ♀, Kyoto, 25. VII. 1932. [Hyogo Pref.] 1 ♂, Kitaku, Kobe, 15–17. VII. 1991. [Tottori Pref.] 1 ♂, Mt Kyusyozan, 8. VII. 1963. [Kagoshima Pref.] 1 ♀, Mt Kaimondake, 22. VII. 1979.

Distribution. Korea (North, South), Japan (Honshu, Kyushu, Ryukyus).

This species is similar to the next species, *P. dolosana* (Kennel), but can be separated by the forewing markings being reddish orange instead of fuscous orange in the latter, and in having a uniformly long and narrow uncus. This species was described by Walsingham (1900) based on the five specimens collected from Weonsan (North Korea) and Kyushu (Japan), but no further specimen has been found in Korea.

***Phiaris dolosana* (Kennel), comb. nov. (Figs 3, 11, 19, 26)**

Penthina dolosana Kennel, 1901: 254. Type locality: Russia (Suchan, Primorye).

Argyroplote dolosana: Kennel, 1916: 415, pl. 17, fig. 31; Caradja, 1916: 57; Liu & Bai, 1977: 80, pl. 8, fig. 22, pl. 16, fig. 138, pl. 24, fig. 138; Shen & Liu, 1988: 36, fig. 100 (wing, ♂ ♀ genitalia).

Loxoterma dolosana: Issiki, 1950: 486, fig. 1321.

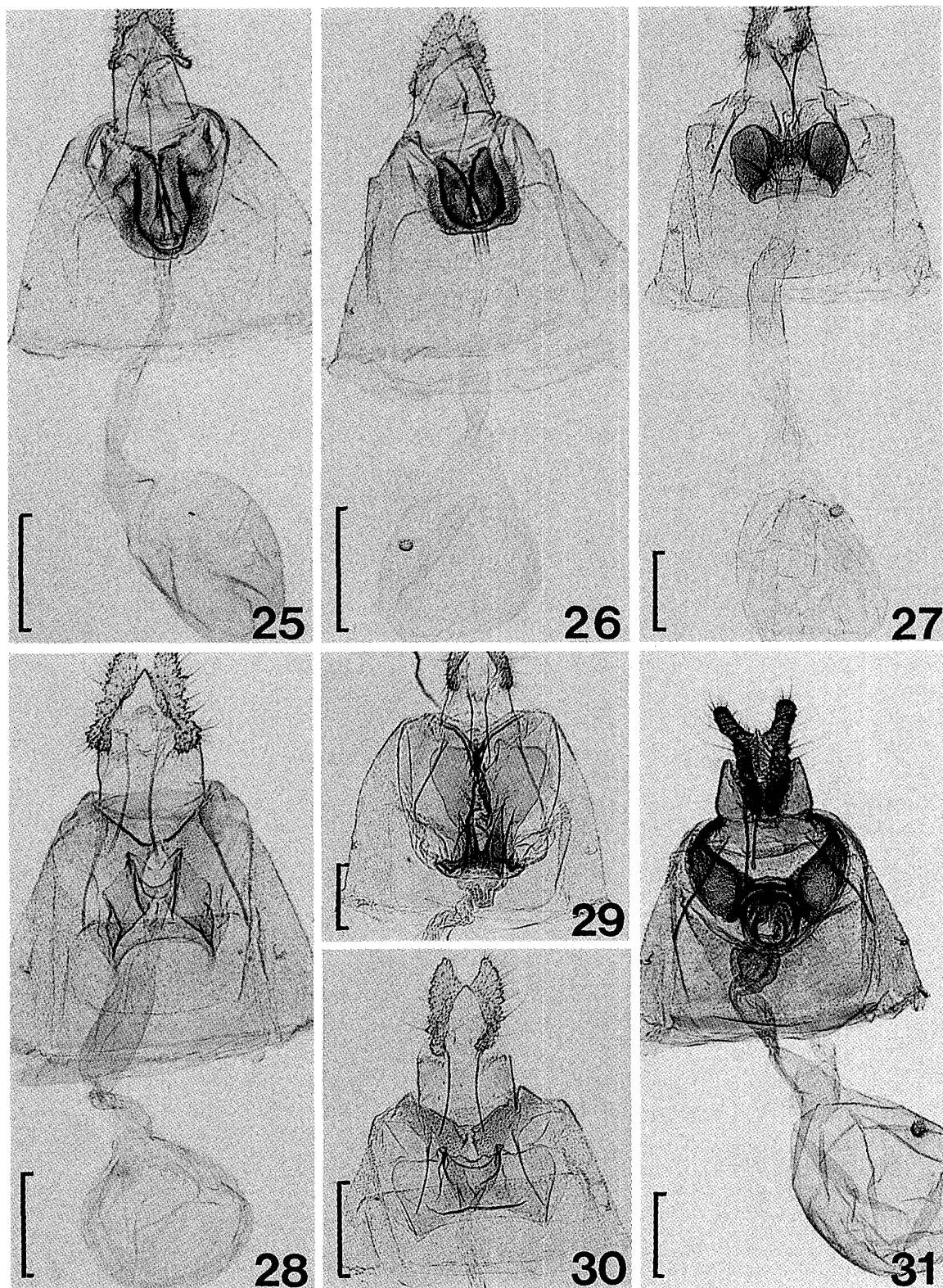
Exartema dolosana: Issiki, 1932: 1458, fig. 2885; Inoue, 1954: 107.

Exartema dolosanum: Issiki, 1957: 70, fig. 344; Okano, 1959: 262, pl. 175, fig. 27; Oku, 1967: 54.

Olethreutes dolosana: Razowski, 1971: 533, fig. 166; Kuznetsov, 1973: 125; Kawabe, 1982: 1: 108, 2: 170, pl. 27, fig. 5, pl. 292, fig. 5; Park, 1983: 719, 983, fig. 385, pl. 46, fig. 819; Park & Park, 1988: 74, figs 8, 24; Byun *et al.*, 1998: 123, fig. 211 on p. 219 (adult), fig. 211 on p. 252 (♂ genitalia).

Olethreutes dolosanum: Razowski, 1995: 310; Razowski, 1999: 103.

Wing-expanse. ♂ ♀ 14–17 mm. Wing markings as in Fig. 3. Male secondary sexual characters: Hair pencil of hindleg dark gray, as long as tibia. Dorsum of hindwing with a large spindle-shaped roll, the roll reaching from base to beyond tornus, separated at middle



Figs 25-31. Female genitalia of *Phiaria* spp. 25. *P. castaneana* (Walsingham). 26. *P. dolosana* (Kennel). 27. *P. examinata* (Falkovitsh). 28. *P. hokkaidana* sp. nov., paratype. 29. *P. transversana* (Christoph). 30. *P. schulziana* (Fabricius). 31. *P. metallica bicornutana* (Kuznetsov). Scales=0.5 mm.

of dorsum.

Male genitalia (Figs 11, 19). Uncus cone-like, hooked; socius rather small, elongate; gnathos laterally sclerotized. Valva long and narrow, folded at middle; cucullus longer than that of *examinata* (Falkovitsh), slightly necked before middle part, with strong spine-like setae along basal half; sacculus long, narrow, with tuft consisting of 30–35 stout spine-like setae at apical part, and with 7–10 sparse short and weak setae near basal cavity. Aedeagus short, with tapering apex; cornutus absent.

Female genitalia (Fig. 26). Seventh sternite with membranous inner pocket near sterigma. Sterigma large, densely aciculate, bilobed, with two aciculate sclerites at lateral sides. Ostium bursae narrow, opening at anterior part of sterigma. Ductus bursae rather short; colliculum short, tubular, sclerotized laterally; corpus bursae moderate in size; signum small, nipple-like.

Material examined. KOREA: [Seoul] 1 ♂, Cheongryangri, 5. IX. 1982. [GG] 1 ♂, Gwangleung, 10. VII. 1990, 1 ♂, 8. VII. 1992; 1 ♂, Mt Myongji, 28. VII. 1992. [GW] 1 ex., Chuncheon, 21. VI. 1985, 2 ♀, 7. VII. 1987, 2 ♂, 20. VII. 1987, 1 ♀, 12. VIII. 1991; 1 ex., Chuncheon Dam, Chuncheon, 22. VII. 1991; 1 ♂ 1 ♀, Jeongseon, 30. VII. 1991; 1 ♀, Seomyon, Yangyang, 6. VI. 1987, 8 ♂ 2 ♀, 25. VII. 1987, 1 ex, 25. VII. 1987; 1 ♂, Hwengseong Dam, 16. VI. 1994; 2 ♀, Sogumgang, 6. VII. 1988; 1 ♂ 1 ♀, Mt Obong, 1. VII. 1993; 1 ♂ 1 ♀, Mt Samak, 22. VI. 1989, 1 ♂, 19. VII. 1990; 1 ♀, Soyang Dam, 3. VII. 1990; 1 ♂, Mt Odae, 6. VIII. 1989; 1 ♀, Mt Palbong, 5. VII. 1990. [CB] 1 ♀, Mt Weolak, 18. VIII. 1993. [JB] 3 ♂ 2 ♀, Mt Jiri, 19. VII. 1981, coll. CIS. [GG] 3 ♂, Mt Soyo, 7. VII. 1997; 1 ♀, Mt Cheonggye, Euiwang, 23. VII. 1997; 1 ♂ 1 ♀, Mt Suri, 3. VII. 1997, 4 ♂ 4 ♀, 9. VII. 1997. [GW] 1 ♂ 1 ♀, Mt Jeombong, 11. VII. 1997, 1 ♂, 5. VIII. 1997, 1 ♂, 12. VIII. 1997; 1 ♀, Mt Chiak, 12. VII. 1997; 1 ♂, Mt Daedeok, Taebaek, 11. VII. 1997. [CB] 1 ♀, Mt Weolak, 9. VIII. 1997, coll. UIB. JAPAN: [Hokkaido] 2 ♂ 2 ♀, Mt Apoidake, 27–30. VII. 1974; 1 ♂ 1 ♀, Shintoku, Tokachi, 27. VII. 1990; 4 ♂, Bibai, Koshunai, Sorachi, 26. VII. 1982, 2 ♀, 1. VIII. 1982, 2 ♂, 20–21. VII. 1990; 1 ♂, Sapporo, 25. VII. 1967; 1 ♀, Asari Pass, Sapporo, 1–2. VII. 1968; 2 ♂ 1 ♀, Hokkaido U. Exp., Tomakomai, 18–20. VII. 1990. [Iwate Pref.] 1 ♀, Morioka, 3. IX. 1977, 1 ♀, 16. VIII. 1979. [Niigata Pref.] 1 ♀, Sakasamaki Spa, 28–29. VII. 1970. [Yamanashi Pref.] 1 ♂, Kiyosato, 31. VII. 1984. [Nagano Pref.] 2 ♂ 1 ♀, Oshirakawa, Nagawa, 29. VII. 1991; 1 ♂ 2 ♀, Kisofukushima, 10. VII. 1953; 1 ♂, Hosono, Kitaazumi, 25. VII. 1955. [Toyama Pref.] 1 ♂, Oyabe, 15–16. VIII. 1991. [Shizuoka Pref.] 1 ♀, Mt Koshiba, Awa Is., 27. VIII. 1968. [Shiga Pref.] 1 ♂, Taihisankei, 7. VIII. 1956. [Nara Pref.] 1 ♂, Anomura, 24. VI. 1957; 1 ♀, Dorogawa, 29. VII. 1951. [Osaka Pref.] 1 ♂, Mino Park, 1. VII. 1987; 1 ♂, Kishiwada, 15. VII. 1976.

Distribution. Korea (North, South), Japan (Hokkaido, Honshu, Shikoku, Kyushu), China, Russia (Far East).

Host plant. China: *Prunus mume* Sieb. et Zucc. (Rosaceae) (Liu & Bai, 1977).

This species is similar to the preceding species, *P. castaneana* (Walsingham) in the male genitalia. The diagnostic characters are outlined in the remarks on *castaneana*.

***Phiaris examinata* (Falkovitsh), comb. nov. (Figs 4, 12, 20, 27)**

Olethreutes examinata Falkovitsh, 1966: 42, figs 4, 5; Kuznetzov, 1967: 55; Kuznetzov, 1973: 125; Kawabe, 1974: 336; Kawabe, 1982: 1: 108, 2: 170, pl. 24, fig. 19, pl. 285, fig. 2, pl. 292, fig. 2. Type locality: Russia (Klimoutsy, Primorye).

Olethreutes examinatus: Razowski, 1995: 310.

Wing-expanse. ♂ 16.5–18 mm, ♀ 18–19 mm. Wing markings as in Fig. 4. Male secondary sexual characters: Hair pencil of hindleg dark gray, 0.7 times as long as tibia. Dorsum of hindwing with a spindle-shaped roll, reaching from base to beyond tornus.

Male genitalia (Figs 12, 20). Uncus moderate in size, apically narrow, hooked, with slightly emarginate apex; socius long, narrow; gnathos laterally sclerotized. Valva long and narrow, folded at middle; cucullus clavate, necked at middle, with strong spine-like setae along basal half; sacculus with two distinct lobes terminally, the inner lobe overspread with strong spine-like setae, the outer lobe without such setae, the ventro-caudal margin with a row of irregular spine-like setae. Aedeagus short, with tapering apex; cornutus absent.

Female genitalia (Fig. 27). Seventh sternite normal tortricid shape. Sterigma large, heart-shaped, aciculate. Ostium bursae rather broad, cup-shaped, sclerotized, opening at posterior margin of sterigma. Ductus bursae moderate in size; colliculum short, tubular, sclerotized; corpus bursae moderate in size; signum small, nipple-like.

Material examined. JAPAN: [Hokkaido] 1 ♂, Mt Futatsuyama, Shibeche, Kushiro, 8. VI. 1987. [Nagano Pref.] 1 ♂, Omachi, 11. VIII. 1981; 1 ♂, Tobira Spa, 17. VI. 1953; 2 ♂, Oshiradani, Nagawa, 27. VI. 1990; 1 ♂ 1 ♀, Kisojiyama, ca 1,380 m, Nagawa, 23–28. VI. 1990; 1 ♂, Ina, 24. VI. 1972. [Gifu Pref.] 1 ♂, Hikagedaira, 5. VIII. 1978.

Distribution. Japan (Hokkaido, Honshu), Russia (Primorye).

This species is rather similar to *Olethreutes cacuminana* (Kennel) in superficial appearance, but can be distinguished from the latter by the broader forewing and the distinctly emarginate central fascia.

***Phiaris transversana* (Christoph), **comb. nov.** (Figs 5, 13, 21, 29)**

Penthina transversana Christoph, 1881: 75. Type locality: Russia (Vladivostok, Primorye).

Cymolomia transversana: Kennel, 1916: 434, pl. 18, fig. 10; Matsumura, 1931: 1068.

Exartema transversana: Caradja, 1916: 59.

Exartema transversanum: Walsingham, 1900: 126; Inoue, 1954: 108; Issiki, 1957: 70, fig. 342; Okano, 1959: 262, pl. 175, fig. 26; Oku, 1967: 54.

Olethreutes transversana: Rebel, 1901: 108; Kuznetzov, 1967: 56; 1973: 126; Kawabe, 1982: 1: 109, 2: 170, pl. 24, fig. 32; Park, 1983: 718, 982; Park & Park, 1988: 75, figs 11, 25; Byun *et al.*, 1998: 133, fig. 229 on p. 220 (adult), fig. 229 on p. 255 (♂ genitalia).

Olethreutes transversanus: Razowski, 1995: 311; Razowski, 1999: 104.

Wing-expanse. ♂ 17.5–19 mm, ♀ 18–21 mm. Wing markings as in Fig. 5. Male secondary sexual characters: Hair pencil of hindleg dark gray, nearly as long as tibia. Dorsum of hindwing with a cylindrical roll reaching from base to beyond tornus, the roll separated at middle of dorsum.

Male genitalia (Figs 13, 21). Tegumen distinctly narrow; uncus broad, pointed apex, sparsely setose; socius long, drooping; gnathos a membranous transverse band, with long (as long as aedeagus) and slender tuba analis. Valva very long (about 0.5 times the length of abdomen), narrow; cucullus clavate, well separated from sacculus by a longitudinal furrow, projected at middle, sparsely covered with strong spine-like setae along the margin of basal half; sacculus as long as tegumen, narrow, with two tufts consisting of 10–12 stout spine-like setae respectively at apical and middle parts, and sparsely covered with stout setae at lower margin. Aedeagus long, curved, truncate, with a prominence (carina penis) at dorsal apex; cornutus absent.

Female genitalia (Fig. 29). Seventh sternite normal tortricid shape. Sterigma large, strongly sclerotized anteriorly, not aciculate, subdivided into lamella antevaginalis and lamella postvaginalis, the former shield-shaped, consisting of a large inverted subtriangular shape, emarginated at the middle of the posterior part, the latter a broad plate, with Y-shaped sclerites. Ostium bursae large, aciculate, with two pointed lobes, opening at anterior part of sterigma. Ductus bursae rather long; colliculum broad, corn-like; corpus bursae moderate in size; signum small, nipple-like.

Material examined. KOREA: [GG] 6 ♂ 2 ♀, Mt Myongji, 28. VII. 1992. [GW] 2 ♂, Chuncheon, 14. VIII. 1987, 1 ♀, 20. VII. 1987, 1 ♀, 20. VII. 1987, 1 ♂, 4. VIII. 1987, 1 ♂, 19. VII. 1989, 1 ♂, 18. VII. 1989, 1 ♀, 13. VI. 1989, 2 ♂, 21. VII. 1991, 1 ♂, 14. VIII. 1987; 1 ♂, Mt Seolak, 10. VIII. 1989; 8 ♂ 4 ♀, Jeongseon, 30. VII. 1991; 5 ♂ 6 ♀, Mt Jeombong, 10. VIII. 1992; 1 ♂, Chugok, Chuncheon, 30. VII. 1986; 1 ♂, Mt Odae, 6. VIII. 1989; 2 ♂, Mt Yaksu, 9. VIII. 1989; 1 ♀, Mt Gyeong, 2. VIII. 1989; 1 ♂, Hwengseong Dam, 16. VII. 1994; 2 ♂ 2 ♀, Yongpyong, 1. VII. 1991; 6 ♂ 4 ♀, Pyongchang, 31. VII. 1991; 4 ♂, Naemyon, Hongcheon, 14. VIII. 1987; 2 ♀, Bongmyongri, Hongcheon, 23. VII. 1992; 1 ♀, Mt Odae, 26. VI. 1989; 1 ♂, Mt Palbong, 15. VII. 1990; 2 ♂, Mt Samak, 19. VII. 1989; 1 ♀, Seomyon, Yangyang, 10. VII. 1987, 1 ♂ 2 ♀, 25. VII. 1987. [CB] 1 ♂ 1 ♀, Mt Sokri, 19. VIII. 1993. [JB] 1 ♀, Mt Daedun, 22. V. 1992, coll. CIS. [GG] 1 ♀, Mt Suri, 9. VII. 1997. [GW] 2 ♂, Mt Kwangdeok, 9. VII. 1997, coll. UIB. JAPAN: [Hokkaido] 3 ♂ 2 ♀, Nukabira, Higashidaisetsu, 23–25. VII. 1990; 1 ♀, Shintoku, Tokachi, 27. VII. 1990; 2 ♂ 1 ♀, Bibai, Koshunai, 20–21. VII. 1990; 1 ♀, Sapporo, 29. VII. 1969; 4 ♂ 1 ♀, Hokkaido U. Exp., Tomakomai, 18–20. VII. 1990. [Iwate Pref.] 3 ♀, Mt Sotoyama, 4–5. VIII. 1977; 1 ♂ 3 ♀, Kuzakai, Kawaimura, 17. VIII. 1979, 3 ♂ 2 ♀, 29. VII. 1990; 2 ♂ 1 ♀, Yagita, Morioka, 29. VII. 1990; 1 ♂, Kumazawa, Morioka, 29. VII. 1990. [Gunma Pref.] 1 ♀, Doaiguchi, Mt Tanigawa, 6. VIII. 1970. [Niigata Pref.] 1 ♂, Shinbo, Sado I., 2. VIII. 1961; 1 ♀, Tosha, Sado I., 23. VII. 1969, 1 ♂ 4 ♀, 28–29. VII. 1970; 1 ♂, Mt Oominesan, 30–31. VII. 1970. [Nagano Pref.] 1 ♂, Mt Utsukushigahara, 25–26. VII. 1955; 1 ♂, Tobira Spa, 23. VIII. 1954, 2 ♂, 26–27. VII. 1970; 2 ♀, Todai, 21–22. VIII. 1971, 1 ♀, 3. VII. 1971; 2 ♀, Shimashimadani, 27. VII. 1955, 1 ♂, 21. VIII. 1990; 1 ♂, Shirahone Spa, Minamiazumi, 21. VIII. 1990; 1 ♀, Kisojihar, Nagawa, em. 11. VII. 1987, *ex Boehmeria platanifolia* Franch. et Savat. (Urticaceae); 1 ♂, Mt Ontake, 2. VIII. 1953. [Gifu Pref.] 1 ♀, Akibara, Ono, 8. VIII. 1979; 1 ♂ 1 ♀, Mt Takayama, 23. VII. 1954. [Mie Pref.] 1 ♀, Miyazumakyo, Yokaichi, 4. VII. 1987. [Nara Pref.] 1 ♂ 2 ♀, Dorogawa, 30. VII. 1951; 1 ♀, Kawakami, 24. VII. 1991; 2 ♂ 3 ♀, Mt Wasamatayama, 23. VII. 1991. [Osaka Pref.] 1 ♂, Mt Kongosan, 6. VII. 1959; 1 ♀, Mt Iwawakisan, 25. VII. 1958; 1 ♂, Mt Makiosan, 11. VII. 1958; 1 ♂, Mt Katsuragisan, Izumi, 26. VII. 1988; 1 ♀, Mt Sanzyogadake, 29. VII. 1951.

Distribution. Korea (North, South), Japan (Hokkaido, Honshu, Shikoku), China, Russia (Far East).

Host plants. *Boehmeria platanifolia* Franch. et Savat. (Urticaceae); *Glycine max* (Linn.) Merr. (Leguminosae); *Mentha arvensis* var. *piperascens* Merr. (Labiatae); *Fragaria* sp. (Rosaceae).

This species is similar to *P. dolosana* (Kennel) and *P. castaneana* (Walsingham) in the coloration of forewing, but it is separated from them by the following characters: forewing large (17.5–19 mm); central fascia not confluent with terminal patch; male genitalia large, the valva 1.9 times and the aedeagus 3.8 times as long as those of *dolosana*.

***Phiaris hokkaidana* sp. nov.** (Figs 8, 14, 22, 28)

Wing-expanse. ♂ ♀ 10–11.5 mm (Fig. 8). Head brownish gray; tufts on vertex suffused with blackish gray. Antenna dark gray, minutely ciliated. Labial palpus pale ochreous; median segment slightly expanded apically, suffused with gray on outside; terminal segment shortly exposed and drooping, overlaid with dark gray. Thorax blackish gray, sometimes tinged with reddish brown. Fore- and midlegs pale ochreous, overlaid with dark gray; midtibia with two indistinct grayish brown spots at base and subapex; tarsi with five or six brownish rings. Hindleg soiled pale ochreous; tibia sprinkled with dull gray on outside. Abdomen dark gray; anal tufts ochreous, suffused with gray.

Forewing narrow, elongate; costa more or less straight; apex pointed; termen rounded, oblique. Ground color silvery white, irregularly striated and suffused with metallic leaden-gray. Costal strigulae distinct, consisting of five or six pairs of geminated silvery white streaks along costa. Markings orange brown or ferruginous brown, sprinkled with ochreous, with two longitudinal blackish streaks on discal cell and CuP vein respectively; basal patch distinct or diffuse, the outer edge convex; central fascia diffuse or distinct, the inner edge more or less dentate, the outer edge angulated at middle part, with a small, diffusely rounded white discal spot at upper angle of median cell; pretornal patch distinct, very large, subtriangular, the top connected with terminal patch; terminal patch variable in shape, narrow, with a blackish spot at middle part; apical spot large, pronounced. Cilia pale ochreous, partly mixed with grayish scales, with a dark grayish subbasal line. Hindwing elongate-ovate, dark gray; apex rounded. Cilia pale gray, with a dark grayish subbasal line.

Male secondary sexual characters: Hair pencil of hindleg grayish ochreous, 0.8 times as long as tibia. Dorsum of hindwing with a marginal roll, reaching from base to tornus.

Male genitalia (Figs 14, 22). Uncus broad, sparsely setose; socius drooping, narrow; gnathos submembranous, dilated at middle; tuba analis rather broad, separated from gnathos. Valva with longitudinal slit at inner surface, and with narrow median cavity; cucullus rather narrow, concave about middle, with strong spine-like setae on basal two thirds of lower margin; sacculus long and narrow, with two tufts consisting of 15–20 stout spine-like setae at apical and middle parts respectively, and sparsely covered with stout setae at lower margin. Aedeagus shorter than caulis, without cornutus.

Female genitalia (Fig. 28). Seventh sternite normal tortricid shape. Sterigma well-sclerotized, subdivided into lamella antevaginalis and lamella postvaginalis, the former large subpentagonal, expanded at anterio-lateral sides, not aciculate, the latter very large, subtriangular, bilobed, sparsely aciculate. Ostium bursae opening at posterior margin of lamella antevaginalis, broad, cup-shaped. Ductus bursae short, very broad; colliculum short, sclerotized; corpus bursae moderate in size; signum indistinctly present, consisting of numerous denticles.

Material examined. Holotype, ♂, Kawayu, Kushiro, Hokkaido, Japan, 21. VI. 1958 (T. Yasuda). Paratypes: JAPAN: [Hokkaido] 1 ♂ 1 ♀, Mt Teshiotake, ca 1,400 m, 27. VII. 1987 (Y. Kusunoki); 1 ♀, Mt Daisetsuzan, ca 2,000 m, 10. VII. 1962 (T. Kumata); 1 ♀, Komakusadani, Mt Daisetsuzan, 9. VII. 1970 (T. Kumata); 2 ♂ 4 ♀, same data as holotype (T. Yasuda).

Distribution. Japan (Hokkaido).

This new species is closely similar to the next species, *P. schulziana* (Fabricius), but differs

from it in having a shorter wingspan (15–16.5 mm), longer sacculus, and subpentagonal sterigma. The specific name is derived from the type locality “Hokkaido”.

***Phiaris schulziana* (Fabricius) (Figs 7, 15, 23, 30)**

Pyrallis schulziana Fabricius, 1777, *Genera Insect.*: 293, pl. 19, fig. 13. Type locality: Europe (Germany).

Mixodia schulziana: Guenée, 1845: 160; Barrett, 1906: 48.

Argyroploce schulziana: Meyrick, 1928: 575; Ford, 1949: 80; Benander, 1950: 93, fig. 9-1, pl. 5, fig. 23; Hannemann, 1961: 213, pl. 19, fig. 13.

Olethreutes (Phiaris) schulziana: Diakonoff, 1973: 490.

Phiaris schultiana [*sic*]: Pierce & Metcalfe, 1922: 50, pl. 17.

Phiaris schulziana: Issiki, 1957: 70, fig. 338; Okano, 1959: 262, pl. 175, fig. 22; Issiki & Mutuura, 1962: 4; Razowski, 1983: 78, pl. 6, fig. 6, figs 64, 145; Razowski, 1995: 316; Razowski, 1996: 144.

Phiaris (Phiaris) schulziana: Kuznetsov, 1978: 436, 440, fig. 384-2.

Olethreutes schulziana: Rebel, 1901: 107; Bradley, 1959: 74, pl. 18, fig. 209; Bradley *et al.*, 1979: 25, pl. 23, figs 9–12; Kawabe, 1982: 1: 108, 2: 170, pl. 24, fig. 24.

Tortrix pinetana Hübner, 1799: pl. 10, fig. 57. Type locality: Europe.

Phalaena benteiana Donovan, 1801, *Nat. Hist. Br. Insects* 10: 85, pl. 357, fig. 1. Type locality: Europe (Great Britain).

Tortrix zinkenana Frölich, 1828: 71. Type locality: Europe (Germany).

Sericoris daleana Doubleday, 1859, *Synon. List Br. Lepid.*: 22.

Penthina schulziana var. *jivaarana* Hoffmann, 1893, *Stettin ent. Ztg.* 54: 133. Type locality: Europe (Finland).

Wing-expanse. ♂ 19–22.5 mm, ♀ 17.5–19.5 mm. Wing markings as in Fig. 7. The female of this species is similar to the male, but usually has smaller wings, and a darker hindwing. Male secondary sexual characters: Hindleg with a pale brownish hair pencil, 0.5 times as long as tibia. Dorsum of hindwing with a slender marginal roll, reaching from base to tornus.

Male genitalia (Figs 15, 23). Uncus short, strongly hooked, sparsely setose; socius drooping, narrow; gnathos submembranous, dilated at middle, with narrow tuba analis. Valva with longitudinal slit at inner surface, and with median cavity; cucullus rather broad, with strong spine-like setae on basal two-thirds of lower margin; sacculus long, broad, with a tuft consisting of 10–14 variably sized spine-like setae at apical part, and with a series of small spine-like setae at inner margin. Aedeagus moderate in size, with a group of minute dents on lower apical part; cornutus absent.

Female genitalia (Fig. 30). Seventh sternite normal tortricid shape. Sterigma developed, subdivided into lamella antevaginalis and lamella postvaginalis, the former a large, oblong naked plate, not aciculate, confused with ostium bursae, the latter large, V-shaped, sparsely aciculate. Ostium bursae wide cup-shaped, sclerotized. Ductus bursae rather long; colliculum short, tubular, sclerotized; corpus bursae moderate in size; signum small, nipple-like.

Material examined. JAPAN: [Hokkaido] 3 ♂ 3 ♀, Mt Daisetsuzan, 22. VII. 1952; 1 ♂, Mt Sashiruidake, 3. VIII. 1974; 2 ♂ 1 ♀, Mt Asahidake, 9. VII. 1958. [Aomori Pref.] 2 ♂, Mt Hakkodasan, 12. VII. 1958.

Distribution. Japan (Hokkaido, Honshu), Russia (Siberia), Europe.

Host plants. Europe: *Vaccinium oxycoccus* Linn., *Calluna vulgaris* (Linn.) (Ericaceae) (Bradley *et al.*, 1979).

This species is closely similar to the preceding species, *P. hokkaidana* sp. nov. The diagnostic characters are listed in the remarks on *hokkaidana* sp. nov.

***Phiaris metallica* (Hübner)**

Tortrix metallica Hübner, 1799: pl. 11, fig. 68. Type locality: Europe.

Penthina metallica: Ragonot, 1894: 203.

Sericoris metallica: Herrich-Schäffer, 1849: 212; Barrett, 1906: 54.

Olethreutes metallica: Hübner, 1822: 62; Rebel, 1901: 106; Benander, 1950: 97, fig. 9-m, pl. 6, fig. 5; Bradley, 1959: 74, pl. 18, fig. 208; Kostyuk, 1971: 47; Razowski, 1971: 533; Bradley *et al.*, 1979: 24, pl. 23, figs 3–8; Miller, 1985: 410, figs 9–13; 1987: 34; Byun *et al.*, 1998: 126, fig. 216 on p. 219 (adult), fig. 216 on p. 252 (♂ genitalia).

Olethreutes metallicanus: Kuznetsov & Mikkola, 1991: 207.

Argyroplote metallica: Meyrick, 1928: 575; Ford, 1949: 80; Hannemann, 1961: 212, pl. 11, fig. 68; Bentinck & Diakonoff, 1968: 180, pl. 27, fig. 11, pl. 96, figs 272a–c; Liu & Bai, 1977: 81, pl. 5, figs 23, 24, pl. 17, fig. 141, pl. 24, fig. 141.

Phiaris metallica: Pierce & Matcalf, 1922: 49, pl. 17; Kuznetsov, 1973: 135; Razowski, 1983: 77, figs 63, 144, pl. 6, fig. 5; Razowski, 1995: 316; Razowski, 1996: 144; Razowski, 1999: 106.

Olethreutes (Phiaris) metallica: Diakonoff, 1973: 490.

Phiaris (Phiaris) metallica: Kuznetsov, 1978: 438, 440, fig. 385-4.

Tortrix metallana Frölich, 1828: 69. Type locality: Europe (Germany).

Grapholitha lobazewskii Nowicki, 1864, *Microlepid. Species novae*: 9, fig. 1. Type locality: Ukraina (Sambor).

Argyroplote metallica var. *amurensis* Caradja, 1916: 58. Type locality: Russia (Amur).

Wing-expanse. ♂ ♀ 16–23 mm. See Byun *et al.* (1999, fig. 216). Male secondary sexual characters: Hindleg with a grayish hair pencil, 0.4 times as long as tibia. Dorsal roll of hindwing absent.

Male genitalia. See Byun *et al.* (1998, fig. 216).

Female genitalia. See Razowski (1983, fig. 144).

Material examined. KOREA: [North] 1 ♂, Mt Paektu, Samjiyon, Ryanggang Prov., 16. VII. 1987, 1 ♂, 12. VII. 1987; 1 ♂, Mt Paektu, Taehongdan, Ryanggang Prov., 23. VI. 1988, gen. sl. no. CIS-3361, 3363, 3371, coll. CIS.

Distribution. Korea (North), China, Mongolia, Russia (Far East), Europe.

Host plant. Europe: *Vaccinium myrtillus* Linn. (Ericaceae) (Hannemann, 1961).

Transpalearctic species with boreo-montane distribution, associated with montane Tundra and Taiga populations in Primorye territory. It is also associated with lowland deciduous forest (Kuznetsov, 1973).

***Phiaris metallica bicornutana* (Kuznetsov) (Figs 6, 16, 24, 31)**

Olethreutes metallica bicornutana Kuznetsov, 1971: 428, fig. 2a; Kawabe, 1975: 395, fig. 5; Kawabe, 1982: 1: 107, 2: 170, pl. 24, fig. 18, pl. 285, fig. 1. Type locality: Russia (Kuril I., Shikotan I.).

Wing-expanse. ♂ ♀ 16–19.5 mm. Wing markings as in Fig. 6. Male secondary sexual characters: Hindleg with a grayish hair pencil, 0.4 times as long as tibia. Dorsal roll of hindwing absent.

Male genitalia (Figs 16, 24). Uncus broad, constricted at base, strongly hooked; socius fused with tegumen, more or less sclerotized; gnathos broad band-like, connected with socius at lateral sides. Valva broad, with longitudinal slit, and with very large basal cavity; cucullus with strong spine-like setae on lower margin, and with a prominence at costal base; sacculus

long and narrow, angled, with 22–25 strong spine-like setae at apical lower margin. Aedeagus moderate in size, well-sclerotized, with truncate top; cornuti consisting of one or two stout spine-like setae.

Female genitalia (Fig. 31). Papilla analis long, narrow. Eighth segment well-sclerotized. Seventh sternite broadly sclerotized. Sterigma well-sclerotized, subdivided into lamella antevaginalis and lamella postvaginalis, the former rounded, aciculate, supporting ostium bursae, the latter wing-shaped, folded at dorsal side, aciculate. Ostium bursae very large, rounded, well-sclerotized, aciculate. Ductus bursae short, broad; colliculum broad tubular, well-sclerotized, with a small projection at left wall; signum nipple-like.

Material examined. JAPAN: [Hokkaido] 1 ♂, Osoushi Spa, Takachi, 22. VI. 1986; 3 ♂ 3 ♀, Mt Meakandake, Ashoro, Takachi, 1. VI. 1982. [Nagano Pref.] 5 ♂, Mt Tengudake, ca 1,500–2,200 m, 15. VII. 1992.

Distribution. Japan (Hokkaido, Honshu), Russia (Kuril I., Shikotan I.).

This subspecies is very similar to the nomiotypical subspecies in superficial appearance, but differs from the latter by the presence of a much larger uncus, broader valva, and narrower sterigma. The subspecies was originally described by Kuznetsov (1971) collected from Kuril Island and Shikotan Island. The female genitalia of this subspecies are figured for the first time.

Phiaris dissolutana (Stange)

Sericoris dissolutana Stange, 1886: 47: 282. Type locality: Europe (Poland).

Olethreutes dissolutana: Rebel, 1901: 108; Schütze, 1931: 12; Swatschek, 1958: 213; Hannemann, 1961: 208, fig. 432, pl. 19, fig. 8; Palm, 1982: 43; 1985: 71; Kuznetsov & Mikkola, 1991: 207.

Argyroplote dissolutana: Kennel, 1910: 267; 1916: 405, pl. 17, fig. 13; Benander, 1950: 94, fig. 8-y, pl. 5, fig. 4.

Phiaris dissolutana: Razowski, 1983: 76, figs 62, 143, pl. 6, fig. 4; Razowski, 1995: 315; Razowski, 1996: 144; Razowski, 1999: 106; Kuznetsov & Jalava, 1988: 134; Nasu & Kogi, 1999: 303, figs 1, 2.

Phiaris (Phiaris) dissolutana: Kuznetsov, 1978: 438, 440, fig. 385-2.

Wing-expanse. ♂ ♀ 16–17 mm. See Hannemann (1961, pl. 19, fig. 8), Kennel (1916, pl. 17, fig. 13), Benander (1950, pl. 4, fig. 4), Razowski (1983, pl. 6, fig. 4), and Nasu & Kogi (1999, fig. 1).

Male genitalia. See Hannemann (1961, fig. 432), Benander (1950, fig. 8-y), Kuznetsov (1978: fig. 385-2), and Razowski (1983, fig. 62).

Female genitalia. See Razowski (1983, fig. 143).

Distribution. Korea (North), Japan (Hokkaido), Russia, Europe, Scandinavia.

Host plant. Europe: *Polytricum* Hedw. (Polytrichaceae) (Kennel, 1910; Schütze, 1931).

Remarks. This species was reported from Hokkaido, Japan by Nasu and Kogi (1999), but no specimen has been found in Korea. The species is rather similar to *Orthotaenia undulana* Falkovitsh, but differs from the latter in having a narrower central marking and many whitish streaks on the forewing. The male genitalia are similar to those of *P. obsoletana* Zetterstedt, but can be separated by the spine-like setose tuft on the sacculus and three or four stout setose cornuti. The larva of this species has been formerly known to feed on moss (*Polytricum*) in Europe (Kennel, 1910; Schütze, 1931).

References

- Bae, Y. S., 2000. Systematic study of the genus *Phiaris* Hübner (Lepidoptera: Tortricidae) from Korea and Japan, part I. *Trans. lepid. Soc. Japan* **51**: 131-149.
- Barrett, C. G., 1905-07. *The Lepidoptera of the British Islands* **10**: 152-381. London.
- Bradley, J. D., 1959. An illustrated list of the British Tortricidae, II, Olethreutinae. *Entomologist's gaz.* **10**: 60-80, pls 1-19.
- Christoph, H., 1881. Neue Lepidopteren des Amurgebietes. *Bull. Soc. nat. Moscou* **56**: 1-80, 405-436.
- Falkovitsh, M. I., 1966. New species of the genus *Olethreutes* Hb. (Lepidoptera: Tortricidae) from the Far East. *Trudy Zool. Inst.* **43**: 39-48.
- Ford, L. T., 1949. *A Guide to the smaller British Lepidoptera. The Life Histories and Foods upwards of 1370 Species of our smaller Moths with Indices of the Foods and of the Insects with Cross References.* 230 pp. London.
- Frölich, F. G. A., 1828. *Enumeratio Tortricum Württembergiae.* 104 pp. Tubingae.
- Hübner, J., 1799. *Der Sammlung europäischer Schmetterlinge* **7**. Tortrices. 53 pls. Augsburg.
- , 1822. *Systematisch-alphabetisches Verzeichnis alleräbisher bey den Fürbildungen zur Sammlung europäischer Schmetterlinge angegebenen Gattungsbenennungen; mit Vormerkung auch augsburgischer Gattungen:* vi, 81 pp. Augsburg.
- Issiki, S., 1932. Tortricidae. In Esaki, T. et al. (Eds), *Iconographia insectorum japonicorum*: 1449-1468. Hokuryukan, Tokyo.
- , 1950. Eucosmidae. In Esaki, T. et al. (Eds), *Iconographia insectorum japonicorum*: 478-487. Hokuryukan, Tokyo.
- Issiki, S. and A. Mutuura, 1962. A list of the Microlepidoptera bred from coniferous plants in Japan. *Publs ent. Lab. Univ. Osaka Prefect.* **7**: 1-8.
- Karsholt, O., 1996. Notes 4749. In Karsholt, O. and J. Razowski (Eds), *The Lepidoptera of Europe. A distributional Checklist*: 315. Apollo Books, Stenstrup.
- Kawabe, A., 1975. Notes on four unrecorded and a little known species of the Olethreutinae from Japan (Tortricidae). *Japan Heterocerists' J.* (84): 393-395.
- Kennel, J., 1910. Family Tortricidae. In Spuler, A. (Ed.), *Die Schmetterlinge Europas* **2**: 238-296, pls 83-86. Stuttgart.
- , 1916. Die palaearktischen Tortriciden. *Zoologica* **21** (54): 397-546, pls 17-20.
- Kuznetsov, V. I., 1971. New East-Asiatic species of the leaf-rollers of the subfamily Olethreutinae (Lepidoptera, Tortricidae). *Ent. Obozr.* **50**: 427-443 (in Russian).
- Kuznetsov, V. I. and K. Mikkola, 1991. The leaf-roller fauna of North Eastern Siberia, USSR, with descriptions of three new species (Lepidoptera: Tortricidae). *Nota lepid.* **14**: 194-219.
- Kuznetsov, V. I. and J. Jalava, 1988. Soviet-Finnish entomological expeditions to southern Siberia 1982-1984. 2. Tortricidae (Lepidoptera). *Nota lepid.* **11**: 126-138.
- Meyrick, E., 1928. *A revised handbook of British Lepidoptera.* 914 pp, London.
- Miller, W. E., 1985. Nearctic Olethreutes: Five new synonymies, two revised statuses, and notes (Lepidoptera: Tortricidae). *Proc. ent. Soc. Wash.* **87**: 408-419.
- Nasu, Y. and H. Kogi, 1999. The occurrence of *Phiaris dissolutana* (Stange) (Lepidoptera, Tortricidae) in Japan. *Trans. lepid. Soc. Japan* **50**: 303-306.
- Oku, T., 1967. Tortricoida as agricultural and horticultural pests in Hokkaido, with special reference to the host plants. *Bull. Hokkaido Forest Exp. Stn* **16**: 44-62.
- Palm, E., 1982. Atlas over viklernes udbredelse i Danmark (Tortricidae and Cochylidae). *Dansk Faun. Bibl.* **2**: 1-110.
- , 1985. Tortricidae. In Schnack, K. (Ed.), Katalog over de danske Sommerfugle. *Ent. Meddr.* **52**: 67-76.
- Pierce, F. N. and J. W. Metcalfe, 1922. *The Genitalia of the Group Tortricidae of the Lepidoptera of the British Islands.* xxii, 101 pp, 34 pls. Oundle, Northants.
- Ragonot, E. L., 1894. Notes synonymiques sur les Microlépidoptères et descriptions d'espèces peu connues ou inédites. *Ann. Soc. ent. Fr.* **63**: 161-226.
- Rebel, H., 1901. In Staudinger, O. and H. Rebel (Eds), *Catalog der Lepidoptera des palaearktischen*

- Faunengebieten* 2. 368 pp. Berlin.
- Shen, G. and Y. Liu, 1988. *Category of Jiangxi Microlepidoptera*. 84 pp. Editorial Board of Jiangxi Agricultural Univ.
- Schütze, K.T., 1931. *Die Biologi der Kleinschmetterlinge, unter besonderer Berücksichtigung ihrer Nährpflanzen und Erscheinungszeiten*. 235 pp. Verlag Internationalen Entomologischen Vereins E. V., Frankfurt am Main.
- (Others: See to the part I of this study, *Trans. lepid. Soc. Japan* 51: 131-149).

摘 要

韓国と日本産 *Phiaris* 属 (鱗翅目, ハマキガ科) の分類学的研究 (II) (裴良燮)

本論文において、韓国と日本産の *Phiaris* 属のうち *olivana* 種群に含まれる 9 種を扱った。本種群は雄交尾器の次の 3 特徴により他の種群と区別できる: (1) *uncus* は顕著な鉤状で通常 2 葉, (2) *tegumen* は高い, (3) *valva* は細長く、内面に明瞭な切れ込みを持つ。扱った 9 種のうち 2 種 *toshio-okui* Bae, *hokkaidana* Bae は日本から新種として記載し、残りの 7 種は従来から知られていた種であるが、そのうちの 4 種 *castaneana* (Walsingham), *dolosana* (Kennel), *examinata* (Falkovitsh), *transversana* (Christoph) については今回新たに *Olethreutes* 属から本属に移した。

[文責: 那須義次]

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